

CLAIMS

What is claimed is:

1. A method for managing files, the method comprising:
 - mapping information about a file system to a comparison file, the information identifying at least a first item in the file system located at a first location, the first location being identifiable by a first location information;
 - making a working version of a portion of the file system, the working version including at least a first working item that corresponds to the first item, the first working item initially being located at a second location identifiable by the first location information; and
 - using information in the comparison file and about the working version to subsequently determine if the first working item is located at a third location identifiable by a second location information, the second location information being different than the first location information.
2. The method of claim 1, wherein if the first working item is located at the third location, the method includes causing the first item in the file system to move to a fourth location identifiable by the second location information.
3. The method of claim 1, using information in the comparison file and about the working version to subsequently determine if the first working item is located at a third location identifiable by a second location information includes determining if the first working item has a new name.

- 1 4. The method of claim 3, wherein making a working version of a portion of the file
2 system includes recording a creation time of the first working item in the comparison
3 file.
- 1 5. The method of claim 3, wherein using information in the comparison file and about
2 the working version to subsequently determine if the first working item is located at a
3 third location identifiable by a second location information includes locating the first
4 working item in the working version using the creation time.
- 1 6. The method of claim 1, further including signaling the file system to delete the first
2 item if the first working item is omitted from the working version.
- 1 7. The method of claim 6, further including using the creation time of the first working
2 item to determine that the first working item has been deleted from the working version.
- 1 8. The method of claim 4, wherein making a working version of a portion of the file
2 system includes recording a modification time of the first working item in the
3 comparison file.
- 1 9. The method of claim 1, further comprising determining if the first working item was
2 edited subsequent to making the working version.
- 1 10. The method of claim 8, further comprising determining if the first working item was
2 edited subsequent to making the working version using the modification time of the
3 first working item.
- 1 11. The method of claim 10, further comprising determining if a subsequent modification
2 time of the first working item is different than the recorded modification time for the
3 first working item.

- 1 12. A method for managing files, the method comprising:
2 mapping information about a file system to a comparison file;
3 making a working version of a portion of the file system; and
4 using information in the comparison file and about the working version to subsequently
5 determine if a first working item in the working version was once copied from a
6 second working item in the working version.
- 1 13. The method of claim 12, further comprising causing the portion of the file system to
2 include the first working item after determining the first working item was once
3 copied from the second working item.
- 1 14. The method of claim 12, wherein the second working item originates from a first item
2 in the portion of the file system.
- 1 15. The method of claim 13, wherein the second working item is created as new after the
2 working version is made.
- 1 16. The method of claim 13, wherein a content of the first working item is different than a
2 content of the second working item.
- 1 17. The method of claim 14, wherein making a working version includes recording both a
2 creation time and a modification time in the comparison file for the second working
3 item.
- 1 18. The method of claim 17, wherein using information in the comparison file and about
2 the working version to subsequently determine if a first working item in the working
3 version was once copied from a second working item in the working version includes
4 identifying a creation time and a modification time for the first working item.

- 1 19. The method of claim 18, wherein using information in the comparison file and about
2 the working version to subsequently determine if a first working item in the working
3 version was once copied from a second working item in the working version includes
4 detecting that the modification time of the first working item is before the creation
5 time of the first working item.
- 1 20. The method of claim 19, wherein using information in the comparison file and about
2 the working version to subsequently determine if a first working item in the working
3 version was once copied from a second working item in the working version includes
4 matching the modification time of the first working item with the modification time
5 of the second working item.
- 1 21. The method of claim 12, further comprising determining if the first working item was
2 edited after being copied from the second working item.
- 1 22. The method of claim 12, further comprising determining that the first working item is
2 new if the creation time of the first working item is different than a creation time of
3 all of the items identified by the comparison file, and if the modification time for the
4 first working item is greater than or equal to creation time for the first working item.
- 1 23. The method of claim 22, further comprising causing the portion of the file system to
2 include the first working item after determining the first working item is new.
- 1 24. The method of claim 12, wherein using information in the comparison file and about
2 the working version to subsequently determine if a first working item in the working
3 version was once copied from a second working item in the working version includes
4 comparing a content of the first working item to a content of the second working item.
- 1 25. A method for managing files, the method comprising:

3 working version includes locating the first working item in the working version using
4 the creation time.

1 31. A method for managing files, the method comprising:
2 mapping information about a file system to a comparison file, the information identifying at
3 least a first item in the file system located at a first location, the first location being
4 identifiable by a first location information;
5 making a working version of a portion of the file system, the working version including at
6 least a first working item originating from the first item, the first working item
7 initially being located at a second location, the second location being identifiable by
8 the first location information; and
9 using information in the comparison file and about the working version to determine if a
10 compound operation was performed on the first working item, the compound
11 operation including at least two successive operations from a set of operations that
12 consist of changing the first location information for the first working item, making a
13 first working copy from the first working item, and editing a content of the first
14 working item.

1 32. The method of claim 31, further comprising causing the portion of the file system to
2 incorporate changes made by operations performed on the working version so that the
3 first item matches the first working item.

1 33. The method of claim 31, wherein for one of the at least two compound operations
2 being making a first working copy from the first working item, the method further
3 includes determining if a selected working item in the working version was once
4 copied from the first working item.

1 34. A computer system comprising:

- 2 a memory to store a working version of a portion of a file system located on a second
 - 3 computer system; and
 - 4 a processor that marks at least a creation time of a first working item in the working version,
 - 5 the first working item originating from a first item of the portion of the file system,
 - 6 the processor subsequently using the creation time to detect an operation performed
 - 7 on the first working item.
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- 1 35. The computer system of claim 34, further comprising a network interface to exchange
 - 2 communications over a network with the second computer, the communications being
 - 3 for generating the working version.
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- 1 36. The computer system of claim 34, wherein the processor uses the creation time to
 - 2 determine if a location of the first working item was subsequently changed.
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- 1 37. The computer system of claim 34, wherein the processor uses the creation time to
 - 2 determine if multiple operations were performed on the first working item.
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- 1 38. The computer system of claim 34, wherein the processor initially marks a
 - 2 modification time with the creation time, the modification time being altered when
 - 3 the first item is subsequently edited.
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- 1 39. The computer system of claim 38, wherein the processor compares the creation time
 - 2 to the modification time to identify the operation performed on the first working item.
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- 1 40. The computer system of claim 38, wherein the processor detects that a content of the
 - 2 first working item was edited if the modification time is subsequently changed from
 - 3 initially being marked.

41. The computer system of claim 38, wherein the processor detects whether a second working item has the modification time of the first working item in order to determine that the second working item was once copied from the first working item.

42. The computer system of claim 38, wherein the processor detects the creation time of the first working item to determine that the first working item was moved to a new location, and wherein the processor detects that the modification time of the first working item has changed to determine that the first working item was also edited.

43. A computer system comprising:
a memory to store a working version of a portion of a file system accessible on a second computer, the working version including a plurality of working items, the memory also storing a comparison file including information about the plurality of working items; and
a processor configured to record at least a first time value for a first set of working items in the working version when the first set of working items are initially stored in the memory, the processor subsequently identifying a first time value of a second working item in the working version, the processor comparing the first time value of the second working item with the first time values of the first set of working items to detect an operation performed on the working version that affects the second working item.

44. The computer system of claim 43, further comprising a network interface to exchange communications over a network with the second computer, the communications being for generating the working version from the file system.

45. The computer system of claim 43, wherein the processor records the first time values of the first set of working items in a comparison file.

- 1 46. The computer system of claim 44, wherein the comparison file also includes
2 information about a plurality of items in the portion of the file system, and wherein at
3 least some of the plurality of working items originate from the plurality of items in the
4 portion of the file system.
- 1 47. The computer system of claim 43, wherein the first time values of the first working
2 items correspond to creation times for those items.
- 1 48. The computer system of claim 43, wherein the operation detected includes creating
2 the second item after the first time values of the first set of working items are
3 recorded.
- 1 49. The computer system of claim 48, wherein the operation detected includes creating
2 the second item as a copy of one of the first set of working items.
- 1 50. The computer system of claim 43, wherein the processor records at least a second
2 time value for each of the first set of working items when the first set of working
3 items are initially stored in the memory, the second time values corresponding to
4 modification times in which a content of the corresponding item was last altered or
5 created.
- 1 51. The computer system of claim 50, wherein the processor identifies a second time
2 value of a second working item, and compares the first time value and the second
3 time value of the second working item to the first time value and the second time
4 value of the first set of working items to identify the operation.
- 1 52. The computer system of claim 51, wherein the first set of working items originate
2 from corresponding items in the portion of the file system, and wherein the processor

- 3 detects the operation as creating the second working item after the working version is
4 received.
- 1 53. The computer system of claim 52, wherein the processor detects the operation as
2 creating the second working item from one of the first set of working items.
- 1 54. The computer system of claim 53, wherein the processor detects the operation as
2 creating the second working item as a new item.
- 1 55. The computer system of claim 53, wherein the first time values of the first working
2 items correspond to creation times for those items, and wherein the second time
3 values for the second working item and for the first set of working items correspond
4 to a modification time for the respective working items in the working version.
- 1 56. The computer system of claim 55, wherein the operation is detected as creating the
2 second working item from one of the first set of working items if the second time
3 value matches the first time value of one of the first set of working items.
- 1 57. The computer system of claim 55, wherein multiple operations are detected, including
2 a first operation creating a third working item, and a second operation creating the
3 second working item as a copy of the third working item.
- 1 58. The computer system of claim 57, wherein the processor detects the first operation as
2 creating the third working item as a new item if a first time value of the third working
3 item does not match the first time value of one of the first set of working items.
- 1 59. The computer system of claim 58, wherein the processor detects the second operation
2 as creating the second working item as a copy of the third working item if the second
3 time value of the second working item is before the first time value of the second

4 working item, and if the second time value of the second working item matches the
5 first time value of the third working item.

1 60. A computer system comprising:
2 a server that stores a file system; and
3 a client coupleable to the file system to retrieve at least a portion of the
4 file system, the portion of the file system being made available on the client as a
5 working version, the working version initially including a plurality of working
6 items, each working item originating from a corresponding item in the file
7 system; and
8 processing resources to record initial information about the working
9 version, and to subsequently detect two or more operations performed on the
10 working version, the operations being selected from a group of operations
11 consisting of adding an item to the working version, editing an item in the
12 working version, deleting an item from the working version, and moving an
13 item in the working version to a new location.

1 61. The computer system of claim 60, wherein the processing resources
2 signal the file system to change at least some of the file system to reflect the
3 operations performed on the working version.

1 62. The computer system of claim 60, wherein the operation of adding an
2 item to the working version includes copying a second working item from a first
3 working item in the working version.

1 63. The computer system of claim 60, wherein the operation of adding an
2 item to the working version includes creating a second working item as a new
3 item.

1 64. The computer system of claim 60, wherein the initial information
2 recorded about the working file includes a first time value for a plurality of
3 working items in the working version, the first time value indicating an
4 origination of each working item from either another working item in the
5 plurality of working items or from another item on the server.

1 65. The computer system of claim 64, wherein the first time value is a
2 creation time corresponding to when that item was created on the client.

1 66. The computer system of claim 64, wherein the first time value is a
2 modification time that records a last instance of when that item was altered or
3 created.

1 67. The computer system of claim 60, wherein the processing resources are
2 located on the client.

1 68. The computer system of claim 60, wherein the processing resources are
2 located on the server.

1 69. The computer system of claim 59, wherein the processing resources are
2 shared between the client and the server.

1 70. The computer system of claim 60, wherein the file system is shared with
2 a plurality of clients, each of the plurality of clients being able to alter the file
3 system, and wherein an altered version of the file system is signaled to the client
4 upon the client making a request to compare the working version with the file
5 system.

1 71. The computer system of claim 70, wherein the server signals the altered
2 version of the file system to the client, and wherein the processing resources are
3 on the client to detect one or more operations performed on the file system after
4 the processing resources record the initial information about the working
5 version.

1 72. The computer system of claim 71, wherein the processing resources
2 compare the altered version of the file system to the initial information recorded
3 about the working version to detect the one or more operations performed on the
4 file system.

1 73. The computer system of claim 72, wherein the processing resources
2 signal the user to select whether to update the file system with each working
3 version item that was altered or created as a result of one or more of the
4 operations.

1 74. The computer system of claim 73, wherein the processing resources
2 signal the user to select whether to update the file system with each item in the
3 altered file system that was created or altered as a result of one or more
4 operations performed on the file system.

1 75. The computer system of claim 74, wherein the processing resources
2 signal the user to select between a first item of the working version and a first
3 item of the altered file system, the first item of the working version being
4 subject to a first operation from the group of operations, the first item of the file
5 system being subject to a second operation from the group of operations,
6 wherein the first item of the working version and the first item of the altered file

system each originate from a first item in the file system, and wherein the first operation is different than the second operation.

76. A computer readable medium carrying instructions for managing files, the instructions including instructions for performing the steps of: mapping information about a file system to a comparison file, the information identifying at least a first item in the file system located at a first location, the first location being identified by a first location information; making a working version of a portion of the file system, the working version including at least a first working item originating from the first item, the first working item initially being located at a second location by the first location information; and using information in the comparison file and about the working version to determine if the first working item is located at a third location identified by a second location information, the second location information being different than the first location information.

77. The computer readable medium of claim 76, wherein if the first working item is located at the third location, the instructions of computer readable medium includes instructions for causing the first item in the file system to move to a fourth location identified by the second location information.

78. The computer readable medium of claim 76, wherein the step of using information in the comparison file and about the working version to determine if the first working item is subsequently located at a third location identifiable by a second location

- 1 85. The computer readable medium of claim 83, further comprising instructions for
2 determining if the first working item was edited subsequent to making the working
3 version using the modification time of the first working item.
- 1 86. The computer readable medium of claim 85, wherein the step of using the
2 modification time of the first working item includes instructions for determining if a
3 subsequent modification time of the first working item is different than the recorded
4 modification time for the first working item.
- 1 87. A computer readable medium carrying instructions for managing files on different
2 computers, the instructions including instructions for performing the steps of:
3 mapping information about a file system to a comparison file
4 making a working version of a portion of the file system;
5 using information in the comparison file and about the working version to subsequently
6 determine if a first working item in the working version was once copied from a
7 second working item in the working version.
- 1 88. The computer readable medium of claim 87, further comprising instructions for
2 causing the file system to include the first working item after determining the first
3 working item was once copied from the second working item.
- 1 89. The computer readable medium of claim 87, wherein the second working item
2 originates from a first item in the file system.
- 1 90. The computer readable medium of claim 88, wherein a content of the first working
2 item is different than a content of the second working item.

- 1 91. The computer readable medium of claim 89, wherein the step of making a working
2 version includes instructions for recording both a creation time and a modification
3 time in the comparison file for the second working item.
- 1 92. The computer readable medium of claim 91, wherein the step of using information in
2 the comparison file and about the working version to subsequently determine if a first
3 working item in the working version was once copied from a second working item in
4 the working version includes instructions for identifying a creation time and a
5 modification time for the first working item.
- 1 93. The computer readable medium of claim 92, wherein the step of using information in
2 the comparison file and about the working version to subsequently determine if a first
3 working item in the working version was once copied from a second working item in
4 the working version includes instructions for detecting that the modification time of
5 the first working item is before the creation time of the first working item.
- 1 94. The computer readable medium of claim 93, wherein the step of using information in
2 the comparison file and about the working version to subsequently determine if a first
3 working item in the working version was once copied from a second working item in
4 the working version includes instructions for matching the modification time of the
5 first working item with the modification time of the second working item.
- 1 95. The computer readable medium of claim 89, further comprising instructions for
2 performing the steps of determining if the first working item was edited after being
3 copied from the second working item.
- 1 96. The computer readable medium of claim 87, further comprising instructions for
2 performing the steps of determining that the first working item is a new file if the

creation time of the first working item is different than a creation time of all of the items identified by the comparison file, and if the modification time for the first working item is greater than or equal to the creation time for the first working item.

97. The computer readable medium of claim 96, further comprising instructions for performing the step of causing the file system to include the first working item after determining the first working item is new.

98. The computer readable medium of claim 82, wherein the step of using information in the comparison file and about the working version to subsequently determine if a first working item in the working version was once copied from a second working item in the working version includes instructions for comparing a content of the first working item to a content of the second working item

99. A computer readable medium for managing files, the computer readable medium carrying instructions including instructions for performing the steps of:
mapping information about a file system to a comparison file, the information identifying at least a first item in the file system located at a first location, the first location being identified by a first location information;
making a working version of a portion of the file system, the working version including at least a first working item originating from the first item, the first working item initially being located at a second location , the second location being identified by the first location information; and
using information in the comparison file and about the working version to detect if at least one of two operations were performed on the working version, the operations including changing the first location information for the first working item, and editing a content of the first working item.

- 1 100. The computer readable medium of claim 99, wherein the step of making a working
2 version of a portion of the file system includes instructions for recording an initial
3 modification time for the first working item in the comparison file, the initial
4 modification time recording a last instance when the first working item was edited or
5 created.
- 1 101. The computer readable medium of claim 100, wherein the step of using information
2 in the comparison file and about the working version to detect if at least one of two
3 operations were performed on the working version includes instructions for
4 subsequently determining if the initial modification time was changed.
- 1 102. The computer readable medium of claim 101, further comprising instructions for
2 performing the step of causing the file system to include the edited content of the first
3 working item.
- 1 103. The computer readable medium of claim 99, wherein the step of making a working
2 version of a portion of the file system includes instructions for recording a creation
3 time for the first working item.
- 1 104. The computer readable medium of claim 103, wherein the step of using information
2 in the comparison file and about the working version to detect if at least one of two
3 operations were performed on the working version includes instructions for locating
4 the first working item in the working version using the creation time.
- 1 105. A computer readable medium carrying instructions for managing files, the
2 instructions including instructions for performing the steps of:

